

From: [Trujillo, Rita, NMENV](#)
To: [Norem, Nancy](#)
Cc: [Uhl, Mary, NMENV](#); [Kuehn, Elizabeth, NMENV](#)
Subject: FW: PNM - NOx Information Review
Date: Thursday, March 20, 2008 4:38:17 PM

Hi Nancy -

I'm forwarding to you an e-mail from Sikander Khan from EPA regarding the classification of the San Juan coal as sub-bituminous. Based on our conversation with and this e-mail from Sikander, we believe that the coal burned in the San Juan Generating Station should be classified as sub-bituminous.

Rita

From: Kuehn, Elizabeth, NMENV
Sent: Friday, March 14, 2008 3:06 PM
To: Uhl, Mary, NMENV; Trujillo, Rita, NMENV; Schooley, Ted, NMENV; Mustafa, Sufi A., NMENV; Kim, Gi-Dong, NMENV
Subject: RE: PNM - NOx Information Review

All-

Below is a summary of our discussion with Sikander Khan at EPA regarding the coal classification at the SJGS.

Thanks,
Liz

From: Khan.Sikander@epamail.epa.gov [mailto:Khan.Sikander@epamail.epa.gov]
Sent: Wed 2/27/2008 2:42 PM
To: Kuehn, Elizabeth, NMENV
Subject: RE: PNM - NOx Information Review

Liz,

Here is a summary of what we discussed today:

ASTM D 388 sets the guidelines for classifying coals and, especially for lignite, sub-bituminous and high-volatile bituminous coals, such classification is based on the higher heating value. For other coals, fixed carbon and volatile contents determine the exact class of these coals.

PNM does not provide sufficient information with their coal analysis to enable us to determine the exact classification of their coal. They have provided only the average coal analysis. What we need is a range of analyses as well as information on surface moisture and ash mineral contents. With the given information, the coal appears to fall in a gray area, where it can be classified as either sub-bituminous or high-volatile bituminous coal. However, since the analysis provided by PNM is for the average coal, it appears that some samples of this coal with heating values below the average may fall squarely in the sub-bituminous column. Please note that, if the analysis provided by PNM is average, chances are that half of the

samples of this coal would have heating values below the 9,502 Btu/lb listed as an average.

The chlorine content and volatile matter of the average coal appear to be a lot like what would be expected of sub-bituminous coals. The chlorine content at 0.03% is too low (I would expect bituminous coal chlorine to be generally higher than 0.1%). The average volatile matter at 33.76% is fairly high and is more typical of sub-bituminous coals. PNM also states that the minimum volatile matter would be 48% on a dry, ash free basis, which is also very high and is representative of a sub-bituminous coal. All of these numbers are based on information provided in the contract PNM recently signed with B&W for the supply of combustion controls. For examples of analyses of US coals, you can refer to B&W's Steam book (41st Edition, Chapter 9, Table 5). This table shows that the volatile content of eastern bituminous coals can be as low as close to 16%. The sub-bituminous coals would have volatile contents always exceeding 30%. Given the low chlorine content, relatively low heating value, and relatively high volatile content, the PNM coal can be classified as sub-bituminous.

It is easier to combust a coal with a higher volatile content in a boiler. This ease of burning for sub-bituminous coals is known to improve efficiency of combustion controls employed to reduce NO_x. With the high volatile coal content, PNM can be expected to achieve good performance from their new combustion controls. You can see the projected differences in NO_x reduction for bituminous and sub-bituminous coals with combustion controls on the EPA website, <http://www.epa.gov/airmarkets/progsregs/epa-ipm/>. Please scroll down to the bottom area of this web page, under the Section, Documentation for EPA Base Case 2006 (v3.0). Click on Section 3 and go to Table A 3-1:3. The last two columns of this table show the NO_x reduction efficiencies that can be achieved with different types of combustion controls on bituminous and sub-bituminous coals. The difference in the efficiencies is more pronounced if you use the formulae in the second-last column. Here you can assume a baseline NO_x rate (for example 0.5 lb/MMBtu) without controls for the two coals and then apply the formulae to see that the NO_x reduction efficiency for subbituminous coal is better than what you can achieve with bituminous coal, with the same NO_x controls. The last column is the default efficiency that is still better for the sub-bituminous coals. The main factor behind these projections is the coal volatile content.

In one of your previous emails, you had referred to documents where PNM and B&W had defined the above coal to fall under sub-bituminous category. I believe that those documents provide another solid proof that this coal should be considered sub-bituminous type.

The contact at our North Carolina office that I mentioned goes by the name Ravi Srivastava and his phone number is 919-541-3444.

I hope that the above is of some help to you in resolving the issues with PNM. Good luck.

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